## THAT WHICH IS CLAIMED:

Sulmen

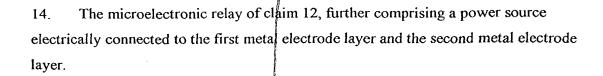
- A microelectronic relay comprising:
  - a support structure;
  - a first contact mounted on a first portion of the support structure;
- a second contact mounted on a second portion of the support structure and deformable with respect to the first contact for selectively engaging the first contact, and a piezoelectric actuator coupled to the second contact, wherein the piezoelectric

actuator selectively deforms the second contact relative to the first contact.

- 2. The microelectronic relay of claim 1, further comprising an insulating layer disposed on the second contact, electrically insulating the second contact from the piezoelectric actuator.
- 3. The microelectronic relay of claim 1, wherein the piezoelectric actuator comprises a piezoelectric thin film sandwiched between a first metal electrode layer and a second metal electrode layer.
- 4. The microelectronic relay of claim 3, further comprising an insulating film sandwiched between the piezoelectric actuator and the second contact.
- 5. The microelectronic relay of claim 4, wherein the piezoelectric film is chosen from a group consisting of a ceramic thin film with a piezoelectric composition, a ceramic thin film with an electrostricive composition, a polymer thin film with a piezoelectric composition, and a polymer thin film with an electrostrictive composition.
- 6. The microelectronic relay of claim 1, wherein the second contact is a cantilever having a projection positioned opposite the first contact so that the first contact resides between a portion of the projection and the first portion of the support structure.
- 7. The microelectronic relay of claim 1, wherein the relay has a conductive state and a nonconductive state, wherein the second contact is electrically connected to the first

contact in the conductive state and electrically isolated from the first contact in the nonconductive state.

- 8. The microelectronic relay of claim 1, wherein the second contact is a bridge having a deformable central portion positioned opposite the first contact so that the first contact resides between the deformable central portion and the support structure.
- 9. A microelectronic relay comprising:
  - a support structure;
  - a first contact coupled to the support structure;
- a second contact coupled to the support structure at a plurality of positions and having a deformable portion substantially opposite the first contact for selectively engaging the first contact, and
- a piezoelectric actuator coupled to the second contact, wherein the piezoelectric actuator selectively deforms the second contact relative to the first contact.
- 10. The microelectronic relay of claim 9, wherein the second contact comprises: a first end coupled to the support structure at a first position; a second end coupled to the support structure at a second position, and a central portion substantially between said first end to said second end.
- 11. The microelectropic relay of claim 9, further comprising an insulating layer disposed on the second contact.
- 12. The microelectronic relay of claim 9, wherein the piezoelectric actuator comprises a piezoelectric film sandwiched between a first metal electrode layer and a second metal electrode layer.
- 13. The microelectronic relay of claim 10, wherein the central portion is deformable.



- 15. The microelectronic relay of claim 14, wherein the piezoelectric film is chosen from a group consisting of a ceramic thin film with a piezoelectric composition, a ceramic thin film with an electrostricive composition, a polymer thin film with a piezoelectric composition, and a polymer thin film with an electrostrictive composition.
- 16. A method of fabricating a microelectronic relay comprising the steps of: providing a support structure;

fabricating a first contact on a first portion of the support structure;

fabricating a second contact on a second portion of the support structure, wherein the second contact is deformable with respect to the first contact for selectively engaging the first contact, and

fabricating a piezoelectric actuator that selectively deforms the second contact relative to the first contact.

- 17. The method of claim 16, further comprising the step of forming an insulating layer between the second contact and the piezoelectric actuator.
- 18. The method of claim 17, wherein the step of fabricating a piezoelectric actuator comprises:

forming a first metal electrode layer on the insulating layer; depositing a piezoelectric material on the first metal electrode layer; depositing a second metal electrode layer on the piezoelectric material.